

- 1 6. A method of claim 1, wherein said laser beam is a XeCl excimer laser having a wavelength of
2 308 nm.
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- 4 7. A method of claim 1, wherein said laser beam is a solid state diode laser having a wavelength
5 range of about (0.95 – 2.1) microns with a power higher than 2 watts and focused to a spot size less
6 than 0.5 mm on the sclera surface.
7
- 8 8. A method of claim 1, in which said beam spot controller consists of at least one focusing
9 spherical lens to couple the said laser beam to the said fiber delivery unit.
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- 11 9. A method of claim 1, wherein said fiber delivery unit consists of an optical fiber having a length
12 of about (0.5 - 1.5) meter and core diameter of about (0.2 - 0.8) mm and a hand piece connected to a
13 fiber tip.
14
- 15 10. A method of claim 9, wherein said fiber delivery unit is substantially transparent to the
16 wavelength of the said laser beam.
17
- 18 11. A method of claim 9, wherein said fiber tip is made of a similar material as that of the fiber and
19 is made in one of the following shapes to focus the said laser beam onto the treated sclera area of the
20 eye: conical, spherical, 90-degree reflecting angle and flat end.
21
- 22 12. A method of claim 9, wherein said fiber tip focuses the said laser beam onto the treated area of
23 the eye at a spot size of about (0.1 - 0.5) mm in diameter.
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- 25 13. A method of claim 9, wherein said fiber tip is made in a cylinder shape to focus the said laser
26 beam onto the treated area of the eye at a line shape having a dimension of about (0.1 - 0.4) in width
27 and (0.5 - 4.0) mm in length.
28
- 29 14. A method of claim 9, wherein said fiber tip is operated in a contact-mode to ablate the sclera
30 tissue to a depth of about (300 - 800) microns.
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- 32 15. A method of claim 9, wherein said fiber tip is operated in a non-contact mode to ablate the sclera
33 tissue to a depth of about (300 - 800) microns.
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- 35 16. A method of claim 1, wherein said fiber delivery unit is controlled by the surgeon to perform a
36 predetermined patterns outside the limbus of the cornea by manually moving the fiber tip in the
37 radial direction of the cornea.
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- 39 17. A method of claim 1, wherein said fiber delivery unit is attached to a scanning device to perform
40 said predetermined patterns outside the limbus of the cornea and scan said laser beam along the
41 radial direction of the cornea.
42
- 43 18. A method of claim 1, wherein said predetermined patterns outside the limbus of the cornea
44 defined by the area between two circles having radius of about 5.0 mm and 9.0 mm, respectively.
45
- 46 19. A method of claim 1, wherein said predetermined pattern includes at least 3 radial lines around
47 the area outside the corneal limbus.
48
- 49 20. A method of claim 1, wherein said predetermined pattern includes at least one ring formed by 3
50 circular spots having a diameter of about (0.2 - 0.5) mm around the area outside the corneal limbus.